REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the remarks that follow. By this Amendment, claims 1, 29 and 31 are amended in accordance with the telephone discussions held with the Examiner and noted below. Claims 2 and 15-28 had been cancelled without prejudice or disclaimer, in a previous filing. Claims 1, 3-14, and 29-47 are pending in the application. Re-examination and reconsideration of the application, as amended herein, are requested.

Claims 1, 6, 10-14, 29, 31-34, 39-47 are rejected under 35 U.S.C. 102(b) as being anticipated by Krenik (USP 5,693,577). Claims 3, 4, 7, 30, 35, 36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krenik in view of Wolf et al. Claims 5 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krenik in view of Schulman '808. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krenik in view of Schulman (USP 5,750,926). These rejections are respectfully traversed, as follows.

Applicant hereby expresses appreciation to the Examiner (Ms. Cross) for the courtesy of the telephone interviews that took place on February 7, 2006 and March 2, 2006. In the interview of February 7, 2006, the undersigned explained differences between the pending claims and the references of record. In particular, the undersigned explained that the Krenik reference (USP 5,693,577) describes a diffusion process, in which a material (dopant) is added to and diffused into a semiconductor substrate material to create conductive regions within the substrate. In contrast, independent claims 1, 29 and 31 of the present patent application recite a via (or at least one via) "comprising a linear hollow path formed from the first side of the substrate to the second side of the substrate and filled with an electrically conductive material ..." As explained in the interview, the diffusion of a dopant into a semiconductor substrate (as described by Krenik) does not create a linear hollow path. Furthermore, the addition of dopant to Krenik's semiconductor substrate does not form a filled, linear hollow path (as no hollow path existed to fill).

To further emphasize distinctions over Krenik, claims 1, 29 and 31 are amended herein (without prejudice or disclaimer to seeking protection for the scope of the original claims in a

further patent application) to recite that the substrate is "composed of alumina." In the telephone interview of March 2, 2006, applicant proposed those claim amendments to expedite the prosecution of the application. It is noted that an alumina substrate of 92%-96% alumina was already recited in dependent claims 7 and 38. Applicant appreciates the Examiner's indication that the claim amendment would be entered as a response to the final Office Action and would not provoke an Advisory Action. Applicant believes that the claims are distinguished from the prior art of record and are in condition for allowance.

In contrast to the claimed sensing apparatus having a substrate composed of alumina, Krenik's process requires diffusion and, thus, Krenik discloses a substrate made of a semiconductor material capable of being diffused with a dopant. (See, e.g., Krenik, at col. 2, ll. 3-4: "The sensor is formed on a semiconductor substrate 22, which is N-type silicon in the preferred embodiment.") Krenik's process would not work with a substrate material that is not capable of having dopant diffused therein to form conductive regions. In this regard, Krenik teaches away from such substrate materials as alumina. Moreover, it would not be possible to combine Krenik's diffusion process with an alumina substrate, because (as noted above), Krenik requires a semiconductor substrate that is capable of having a dopant diffused therein.

Accordingly, it is respectfully submitted that the claims are patentably distinguished over the Krenik patent, individually, or in the combinations with other references as suggested by the Examiner. For example, while the Examiner cited the Wolf patent as describing an alumina substrate, it is respectfully submitted that an alumina substrate would not be operable with Krenik's diffusion process. Accordingly, it is submitted that one skilled in the art would not have considered it obvious or possible (and, thus would have had no motivation) to combine an alumina substrate with Krenik's diffusion process. Also, while the Examiner cited the Schulman '808 patent as describing a substrate having circuitry and conductive vias, and cited the Schulman '926 patent as describing a substrate having electronic circuitry on one side and electrode pairs on the other side, neither of the cited Schulman references describe or suggest the distinctions over the Krenik patent noted above. In particular, neither of the cited Schulman patents describe or suggest a substrate that is composed of alumina and an hermetically sealed via comprising a linear hollow path formed from a first side of the substrate to the second side of

the substrate and filled with an electrically conductive material. Accordingly, it is respectfully submitted that claims 1, 29 and 31, as amended herein, are patentably distinguished over the Krenik patent, individually, or in the combinations suggested by the Examiner with Wolf et al., Schulman '808 or Schulman '926. The rejection of claims 1, 29 and 31 is, therefore, respectfully traversed.

The rejections of dependent claims 3-14, 30 and 32-47 is also respectfully traversed at least for reasons as discussed above with respect to parent, independent claims 1, 29 and 30. In addition, dependent claims recite features that further distinguish those claims over the references of record.

For example, claim 6 recites that "the substrate is ceramic insulator." While the Examiner argued that Krenik discloses a substrate (22) "made of a silicon ceramic material," it is respectfully submitted that Krenik discloses the substrate 22 as "a semiconductor substrate 22, which is N-type silicon in the preferred embodiment" (at col. 2, ll. 3-4). Ceramics are commonly known to be inorganic, nonmetallic materials, while silicon is commonly known to be a metalloid. Thus, Krenik's disclosure of an N-type silicon semiconductor substrate does not anticipate or render obvious the ceramic insulator substrate of claim 6.

Claim 3, 30, and 35 recite that "the electrically conductive material is a fritless ink." Claims 4 and 36 recite that "the fritless ink is a gold paste", while claims 5 and 37 recite that "the fritless ink is a platinum paste." It is well known to those skilled in the art that semiconductor dopants (impurities) must be a group III element (e.g. boron) or a group V element (e.g. phosphorus). In contrast, gold paste, platinum paste, or other fritless ink cannot be used as semiconductor dopants. Therefore, one cannot create gold, platinum, or other fritless ink conductive vias using the diffusion method in Krenik. Accordingly, it would not have been obvious (or possible) to combine such materials with Krenik's diffusion process.

Dependent claims 39-41 recite that the "linear hollow path defines a boundary between the electrically conductive material and the substrate." In contrast, it is well known that in a diffusion process (including Krenik's diffusion process), the concentration of impurities tapers

off with distance away from the diffusion source and does not define distinct boudaries. Hence the conductive vias recited in Krenik do not have distinct boundaries with the substrate.

Dependent claims 42-44 recite that the "substrate is insulating." Dependent claims 45-47 recite that the "substrate is non-conducting and non-seminconducting." These claims recite features not disclosed or suggested by Krenik because, as discussed above, Krenik requires the substrate material to be a semiconductor material.

Therefore, it is also submitted that dependent claims 3, 6, 30, 35 and 39-47 are further distinguished from the references of record.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-0872. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-0872. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 50-0872.

Respectfully submitted,

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By: _____

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